AMENDMENT Filed under PCT Article 34

Filed: February 21, 2005

AMENDMENT

To: Commissioner of the Patent Office

(To: Examiner of the Patent Office)

1 Identification of the International Application

PCT/JP2004/003689

2 Applicant

Name: JAPAN SCIENCE AND TECHNOLOGY AGENCY

Address: 1-8, Hon-cho 4-chome, Kawaguchi-shi,
Saitama 332-0012 Japan

Country of nationality: Japan

Country of residence: Japan

3 Agent

Name: (9109) HIRAKI Yusuke
Patent Attorney

Address: Kamiya-cho MT Bldg. 19F,
3-20, Toranomon 4-chome, Minato-ku,
Tokyo 105-0001, Japan

4 Item to be Amended

Claims

PH-2061PCT (Article 34 Amendment)

5. The contents of amendment

(1) In claim 3, the passage "growing a Group-III nitride under high vacuum, wherein a Group III element is fed before" is amended to "growing a Group-III nitride under high vacuum, wherein a Group III element of an amount corresponding to a single monolayer or of a smaller amount is fed onto said clean SiC surface before".

(2) In claim 4, the passage "growing a Group-III nitride under high vacuum" is amended to "growing a Group-III nitride of an amount corresponding to a single monolayer or of a smaller amount on said clean SiC surface under high vacuum".

(3) In claim 6, the passage "removing an oxide film on the surface using a solution containing fluorine and forming a Group-III nitride" is amended to "removing an oxide film on the surface using a solution containing fluorine under high vacuum and forming a Group-III nitride while the step-terrace structure is maintained".

(4) In claim 8, the passage "Ga atoms or In atoms remaining between said SiC layer and said AlN layer" is amended to "Ga atoms or In atoms on the ppm order remaining between said SiC layer and said AlN layer".

(5) Claims 9 to 13 are added.

6. List of documents attached

(1) Pages 18 and 19 of the claims

CLAIMS

1. A crystal growing method comprising the steps of:

forming a step-terrace structure on a SiC surface and then removing an oxide film on the surface; and

performing at least one cycle of a process of irradiation of Si or Ga under high vacuum and then heating, and then growing a Group-III nitride.

2. The crystal growing method according to claim 1, wherein the step of growing a Group-III nitride is performed at a temperature lower than the temperature of the substrate during the heating step.

3. (Amended) A crystal growing method comprising the steps of:

removing an oxide film on a surface and forming a flat and clean SiC surface; and

growing a Group-III nitride under high vacuum, wherein a Group III element of an amount corresponding to a single monolayer or of a smaller amount is fed onto said clean SiC surface before nitrogen is fed.

4. (Amended) A crystal growing method comprising the steps of:

removing an oxide film on a surface and forming a flat and clean SiC surface;

growing a Group-III nitride of an amount corresponding to a single monolayer or of a smaller amount on said clean SiC surface under high vacuum, wherein a surface control element for controlling the mode of crystal growth of said Group-III nitride on the SiC surface is fed first; and

feeding a Group III element and nitrogen, followed by the termination of the feeding of said surface control element.

5. The crystal growing method according to claim 4, wherein said surface control element is Ga or In.

6. (Amended) A crystal growing method comprising the steps of:

controlling a SiC surface to acquire a step-terrace structure; and

removing an oxide film on the surface using a solution containing fluorine in an atmosphere of reduced oxygen partial pressure under high vacuum while the step-terrace structure is maintained.

7. The crystal growing method according to any one of claims 1 to 6, wherein said SiC surface has an offset angle of 0 to 15° with respect to the (0001) Si or (000–1) C plane.

8. (Amended) A stacked structure comprising:

an SiC layer;

an AlN layer; and

Ga atoms or In atoms on the ppm order remaining between said SiC layer and said AlN layer.

9. (Added) The crystal growing method according to claim 1 or 2, comprising the step of forming a step-terrace structure on said SiC surface and removing an oxide film on the surface, and the step of removing the oxide film on the surface and forming a flat and clean SiC surface,

wherein the step of growing a Group-III nitride comprises feeding nitrogen after the Group III element has been fed.

10. (Added) The crystal growing method according to claim 1 or 2, comprising the steps of removing an oxide film on the surface and forming a flat and clean SiC surface,

wherein the step of growing a Group-III nitride under high vacuum comprises the steps of:

feeding, first, a surafce control element for controlling the mode of crystal growth of said Group-III nitride on said SiC surface, feeding a Group III element and nitrogen, followed by the termination of the feeding of said surafce control element.

11. (Added) The crystal growing method according to claim 1 or 2, wherein the step of removing the oxide film comprises removing an oxide film on the surface using a solution containing fluorine in an atmosphere of reduced oxygen partial pressure, and then growing a Group-III nitride.

12. (Added) A heterojunction MISFET comprising:

a SiC substrate;

an AlN layer formed by the crystal growing method according to claim 1 or 2;

a gate electrode formed on said AlN layer; and

a source and a drain formed on either side of said gate electrode.

13. (Added) A heterojunction laser device comprising:

a SiC substrate;

an AlN buffer layer formed by the crystal growing method according to claim 1 or 2;

a first AlGaN cladding layer formed on said AlN layer;

a GaN/InGaN multiquantum well structure; and

a second AlGaN cladding layer formed on said multiquantum well structure.